



**Sierra Nevada Adaptive Management Project
Annual Meeting Notes**

650 Capitol Mall, Sacramento, CA
November 5th, 2008, 9:00 to 3:00 pm

In Attendance:

Roger Bales
Reg Barrett
John Battles
Chris Beale
Vince Berigan
Linda Blum
Steve Brink
Sue Britting
Karen Buhr
Pete Cafferata
Mike Chapel
Brandon Collins
Martha Conklin
Mike Chrisman
Marie Davis
David Edelson
Thomas Efir
Shasta Ferranto
Todd Ferrara
Patricia Flebbe
Pamela Flick
Mike Fris
Frank Gehrke
Jean-David Gerber
Cay Goude
Julie Griffith-Flatter
Quinghua Guo

Russ Henley
Lynn Huntsinger
Kim Ingram
Marek Jakubowski
Maggi Kelly
Mark Kleinman
Susie Kocher
John Litton
Eric Loft
Anne Lombardo
Lynn Lorensen
Dave Martin
Sarah Martin
Diane Macfarlane
Alessandro Montagni
Randy Moore
Susan Moore
Darca Morgan
Teri Morrison
Larry Peabody
Beth Pendleton
Harry Reeves
Tony Rodarte
Kim Rodrigues
Gary Roller
Richard Rypinski
Phil Saksa

Sean Sou
Aimee Sprague
Kim Squires
Scott Stephens
Chris Stermer
Peter Stine
Deanna Stouder
Adriana Sulak
Rick Sweitzer
Doug Tempel
Craig Thomas
Stan Van Velsor
Wendy West
Brenda Whited
Sheila Whitmore

On the Web:

Dan Applebee
Skip Bullock
Geoff Cline
Ann Huber
Maria Mircheva
Ed Murphy

I. INTRODUCTION: Kim Rodrigues welcomed everyone to the meeting. The desired outcome of the morning session was to present an overview of the research conducted so far by the University of California Science Team in the past year and to allow for public interaction and involvement with the project.

II. OVERVIEW OF RESEARCH: Each science team gave a powerpoint presentation with an overview of their research in the past year (these are posted at <http://snamp.cnr.berkeley.edu/>).

III. BREAK OUT SESSION: Each science team hosted a tabling session for all those in attendance who wanted to ask questions or give suggestions about SNAMP research. Notes of each session are listed below.

Public Participation Team session: *UCST - Adriana Sulak, Lynn Huntsinger*

Facilitator - Wendy West

Attending: Linda Blum, Jean-David Gerbe, Cay Coude, Julie Griffith-Flatter, Lynn Lorensen, Beth Pendleton, Stan Van Velsor

Question: *What are you doing to help the USFS with their public outreach and participation?*

- Hosting communication tools trainings for USFS personnel on engaging public
- Hosting Integration Team meetings with stakeholders - the next one is in spring 09
- Observing NEPA meetings in the study areas and determine who is engaged and how
- Interviewing participants to understand how this process of interaction has evolved.
- Hosting a workshop with the USFS to make recommendations for improvement. This will be a two-way discussion with the USFS. This workshop will outline which problems are institutionally unavoidable versus those that can be addressed

Question: *How do you get people engaged? How do you get new people?*

A successful method so far has been to have program representatives in the study areas that can go to the public, connect with members of other groups by presenting SNAMP at their meetings, and get them involved. That is how we got so many locals to the last fisher meeting. For some members of the public, attendance is not possible no matter what kind of an event is done and that creates inequity.

Question: *How do you make sure you keep the message the same across all outreach contacts and the PIs? What do you do when questions come up in the local arena on the USFS process?*

The whole UCST has conference calls every other week where issues can be raised and project process and progress are discussed. All levels of the PPT participate on these calls to ensure the team is current. Local representatives do not answer questions about agencies (per neutrality agreement) but will refer people to the appropriate person for an answer.

Question: *How does the 3rd party neutral role work? How does the neutrality statement work (or not)? How can you study yourself doing outreach? Was there a violation of the neutrality statement?*

In the 3rd party role, UC reports back to the agencies and the public. Having three entities increases the checks and balances. It is difficult. The violation occurred as a result of a communication gap.

We are addressing it in an open and transparent way. We feel that we have learned a lot about how to be open and transparent.

Question: *What changes to SNAMP that have occurred due to public participation?*

Input was used to determine whether wildlife effects should be studied using broad biodiversity measures or specific animals. Also, the water component was added due to public input.

Questions: *How and WILL results be integrated into guidelines and management plans?*

Management plans will be influenced and changed as results become available. Identification of fisher dens sites serve as an example, the USFS is making adjustments based on new information. This was discussed at an integration team meeting with the public there.

Water Team Session UCST - Roger Bales, Martha Conklin, Sarah Martin, Phil Saska
Facilitator - Anne Lombardo

Attending: Steve Brink, Pete Cafferata, Marie Davis, Patricia Fiebe, Frank Gehrke, Tony Rodarte,

Question: *What protocols are you using for the study?*

The current protocols are available on our website at <http://snamp.cnr.berkeley.edu>

Question: *How did you choose those particular watersheds?*

Watersheds were chosen on the basis of a perennial stream and basins of comparable size (1 km²), slope and, to a lesser extent, aspect. All basins are granitic, although there are more metamorphic rocks in the area surrounding the northern site. There is both a control and treatment site. In one case (American River), our control is inside a treatment area, but also inside a PAC, so there will be no treatment near the stream. Eventually we will instrument a higher elevation basin at both northern and southern sites.

Question: *What instrumentation do you currently have?*

Currently, we have installed meteorological stations at both sites. All instrumentation is wired to a data logger, but we are going to try using wireless networks to reduce problems associated with wires (snow creep, failing splices and bear damage). Wireless technologies we are considering include DUST and CROSSBOW.

Question: *How do you deal with vandalism?*

Approaches suggested include installing multiple instruments (e.g. thermometers), monitoring with cameras or putting American flag stickers on equipment.

Question: *How will you determine a water balance? Isn't this a short time to obtain baseline data for the treated basins?*

Measurement and instrumentation is designed to be able to make a water balance for the watersheds. This will include calculating evapotranspiration from met tower measurements, distributed snow depth and soil moisture, precipitation and streamflow.

Question: *How will you measure water quality?*

Water quality measurements will include conductivity, dissolved oxygen, water grab samples and sediment measurements. Based on recent information (unpublished) from the Kings River Experimental Watershed, we have modified our sediment measurements to concentrate on suspended load (turbidity and water samples) and real time information about scour and deposition (scour pans). Placer County is currently developing a calibration curve for turbidity measurements - so we can compare our results to theirs. CalFire has also had experience with developing these rating curves.

Question: *What about other measurements, like erosion?*

Erosion is an issue of concern, particularly the top 1-2" as it affects soil productivity and with the current rate of wildfires, may be significant. However, this was not highlighted for this study.

Question: *How is this water study related to others?*

There are other studies (both existing and proposed) that extend this project. These include KREW in the central Sierra (another FS study site), SWEEP which is funded by the Sierra Nevada Conservancy and will increase the number of instrumented catchments. H2O 2.0 is a DWR initiative for the American River basin. Since DWR and SNAMP investigators are involved in these efforts, there will be similar approaches and data sharing

Owl Team Session: *UCST - Doug Temple*

Facilitator - Shasta Ferranto

Attending: Linda Blum, Steve Brink, David Edelson, Pamela Flick, Diane Macfarlane, Darca Morgan, Harry Reeves, Kim Squires

Question: *What is the study design? What inferences will you be able to make when the study is done? Will you know if owls are nesting closer to edges for forage? Will you know how much suitable habitat is there?*

There is no owl research on the southern study site (Sugar Pine), only at the Last Chance site. Our response variables are territory occupancy, reproductive output, and possibly adult survival. We will compare several competing models that contain different explanatory variables (e.g. amount of pre-existing nesting/roosting habitat within an owl territory). We do not have the ability to quantify the number of snags or amount of downed wood within an owl territory.

Question: *What are the canopy cover intervals being used to characterize owl habitat?*

Intervals are between 40 and 70% and over 70%. This is being determined using a densitometer.

Question: *Do you do prey trapping?*

No, because this is a major undertaking. It would be nice but it is too labor intensive. We are collecting owl pellets to be able to say something about prey. We are cleaning these now.

Question: *How much of the study area is on SPI land? How many treatments will be impacted by private land? What process do these treatments go through?*

About 1/3 of the El Dorado Study Area is on private land.* There are other private landowners as well. Harvests on private land are developed through a Timber Harvest Plan filed with the California Department of Forestry and Fire Protection. We can obtain information on private

harvest by examining Timber Harvest Plans, but the information will probably not be as accurate as getting shapefiles directly from the landowner. The Owl Science Team has access to the private property on the Eldorado Study Area. We do blanket surveys that cover all of the private land and chase owls onto private land if necessary.

** Owl team members stated at the meeting that main landowner was Sierra Pacific Industries, but have since learned that this is not the case.*

Question: *Is SPI cooperating? How will you consider SPI management?*

Yes, we are in contact and sharing information. Sierra Pacific Industries has verbally agreed to provide timber harvest shapefiles for harvests that occur during the SNAMP study. Site visits to verify timber harvest activity may or may not be necessary. There are no nest locations on SPI lands, but the owls use their land for foraging.

Question: *How did the El Dorado study area get incorporated in the SNAMP study?*

There was not a high enough density of owl territories on the Last Chance site to provide meaningful results, so the El Dorado study area was added to increase the sample size.

Question: *What is the impact of the recent fires on owl habitat?*

The Peavine and American River fires each burned a portion of one owl territory on the Last Chance Owl Study Area. For the most part, the burned portions were of low or moderate intensity.

Question: *What is the update on your canopy cover study using experimental radiotelemetry with owls?*

The study is not public yet. A draft report has been issued to the Forest Service and is under review.

Question: *How are nest locations influenced by distance to foraging habitat?*

This is being studied by a member of Rocky's lab in Minnesota. They are looking at the distance from historic nest trees to the nearest edge (both hard and soft edges) to assess whether owl nests are located closer to edges than would be expected by random chance.

Fisher Team Session: *UCST - Reginald Barrett, Rick Sweitzer*

Facilitator - Kim Rogrigues

Attending: Linda Blum, Harry Reeves, Pamela Flick, Diane Macfarlane, Dave Martin, Darca Morgan, Kim Squires, Peter Stine, Craig Thomas, Brenda Whited

Question: *What are you finding as the causes for fisher mortality? What about the four fisher mortalities in the Cedar valley area? What are the ages of males that have died?*

Several of the fishers who died had activities in the Cedar Valley treatment areas (especially fisher number M01). Others were ranging more widely and had a diverse activity range. They have a range of ages but few stable territories. Of those that have died, two were young, and two were adult. M01 was killed by predator, probably a mountain lion. M06 may have been diseased, the results due soon. M3 may also have been diseased (distemper), rather than drowning as first suspected. The evidence that the Cedar valley treatments affected these mortalities is limited. There is insufficient baseline data to make correlations at this time.

Question: *How can road kills be prevented? Can they be prevented by treatments along Hwy 41? Use of culverts, tunnels?*
We don't know.

Question: *Are you using scat survey dogs? What is your camera method?*
Dogs are not currently used although these could be integrated if needed. We are using intensive camera data in SNAMP versus the method in King's river.

Question: *What is tracking being used to determine? Will SNAMP help address fisher habitat and fragmentation?*

The study and tracking is looking for the limiting factor for fisher. The project is being done at the edge of fisher range which is a narrow band north and south that is already fragmented. We are confident we will be able to identify limiting factors for the fisher population.

Question: *How are you doing with following the fisher across jurisdictions?*

Our current problem is that we cannot follow the fisher when they cross into Yosemite National park. There is a need to expand the MOU partnership to include the National parks so that fisher can be followed by air and ground. Habitat information also needs to be collected. A proposal to the Secretary of Interior is required. Dave Martin and Diane Macfarlane can assist with this.

Question: *Are you recommending a fisher conservation strategy?*

Not yet, although if there is new emerging data on disease issues (maybe canine distemper) as a result of necropsies, it may be important to share that information as soon as possible.

Question: *How do you think treating nesting tree buffer areas to meet fuels goals or for forest health and resiliency will affect the fisher? Will you make recommendations on the Standard & Guidelines?*

We need more data to answer the question of how treatments affect the fisher, but our current hypothesis is that reduced cover does harm to the fisher. We have only 1 year of data on natal and maternal den use and for only 1 female. We need more time and data. The project is really just getting started now that we have 20 fisher collared. The UCST will not be making recommendations, we are only sharing data with the USFS.

Fire and Forest Health Session UCST - John Battles, Scott Stephens, Gary Roller

Facilitator - Susie Kocher

In attendance: Sue Britting, David Edelson, Pat Flebbe, Lynn Lorensen, Richard Rypinski, Kim Squires, Craig Thomas

Question: *How do you define forest health and how is your study designed to measure it?*

We use tree mortality to define forest health. A normal background rate is about 1% of trees dying a year. When the probability of mortality goes up higher, forest health goes down. We use tree growth as a long term record of health. We then use growth rings to determine an annual survival probability of trees.

Question: *What about the other components of forest health besides trees? How do you sort out environmental variables that may affect mortality?*

Our measure is tree-centric because although other components of forest health are important, they are not easy to quantify. Inventory plots measure up to 18 meters in diameter, so we do document other vegetation besides trees. Also each tree is paired with another both pre and post treatment. Treatments may introduce spatial diversity that affects different species differently in different areas. This study design should allow us to pick up these and other influences on tree mortality.

Question: *What type of fire modeling are you doing? How do you assign fuel models?*

We are using FlamMap to identify fire type, active versus passive crowning, or surface fires. We are using FVS-FFE to model with different weather ranges. We collect the data, and then use FVS to assign the right fuel model.

Question: *When will you conduct post treatment measurements if treatments are staged and stretch out over a long period? Wouldn't staged treatments affect health differently?*

We want to measure at the end of the treatments. We have some flexibility to move control area data collection schedules around if the treatment is delayed. We may need to collect data at different stages of treatments if treatments are very delayed.

Question: *How does understanding the probability of mortality affect management decisions? How will this be relevant to managers? How will this be relevant to residents?*

Different treatments to affect fire behavior such as prescribed fire or thinning may have different affects on tree mortality. We should be able to better understand these effects and distribute the information to agency managers and the public through the Integration Team process. We can offer the information to residents through our extension network.

Spatial Team Session: *UCST - Qinghua Guo, Marek Jakubowski, Maggi Kelly*

Facilitator - Kim Ingram

In attendance: Alessandro Montagni, Chris Stermer; Peter Stine, Stan Van Velsor

Question: *What is the role of LIDAR in the SNAMP study?*

Our main task is to use LIDAR to characterize the vertical and horizontal forest structure over spatial scales. The pattern and heterogeneity of the forest is critical for habitat. Past fire histories, land use, and ownerships all complicate this.

Question: *What questions will be answered with spatial data?*

How do species respond to this heterogeneity? How can we manage and develop management plans that simulate spatially heterogeneous landscapes? Can we capture relevant spatial patterning with our data?

Question: *Will the spatial team use Environmental Niche Models?*

Yes, we will be determining how LIDAR data can be useful in ENMs and how LIDAR-captured canopy cover and tree structure can be used in ENMs?

Question: How does the spatial team integrate with other teams?

We are doing this through science integration meetings. We have a Spatial / Water / FFEH team meeting coming up in Dec. We are organizing a Spatial / Wildlife joint team meeting too. We would also like to expand MOU partnerships to include the park service and USGS.

IV. SESSION SYNTHESIS: After the breakout session, facilitators for each group reported back the main themes discussed to the whole group. These issues discussed will be used by the UC Science Team to guide further public involvement opportunities in the next year. Then the meeting broke for lunch.